

2004 FACT SHEET – AMENDMENT #1

City of Pasco Industrial Wastewater Treatment Facility

I. GENERAL INFORMATION

Facility: City of Pasco
P.O. Box 293
Pasco, WA 99301

Facility Location: Approximately five miles NE of the city of Pasco; north of East Foster Wells Road.

Type of Facility: Municipally owned combined vegetable processing wastewater treatment system.

Wastewater Treatment: Aerated flow equalization lagoon and spray irrigation to 1274 acres; a 110 MG aerated and lined impoundment stores the water during the winter non-growing season.

II. BACKGROUND

The City of Pasco owns and operates an industrial wastewater treatment facility that was constructed in 1995 that is separate from the domestic wastewater system. It receives process wastewater year around from three vegetable processors. All wastewater is collected at a central location and pumped approximately two miles to the sprayfields comprised of ten center pivots. Wastewater is stored in the lined lagoon during the non-growing season; Dec. – Feb.

A state waste discharge permit was re-issued in May 2004 (SI5369) and expires in May 2009.

III. PERMIT MODIFICATION

The city submitted a permit application in October 2005 to modify the permit by adding four (4) center pivot circles (504 acres) to the sprayfield system; Fig. 1. A revision to the treatment facility's engineering report was also submitted that updated the design capacity of the sprayfield system; City of Pasco, 2005.

The city completed SEPA on the additional acreage in March 2000.

IV. DISCUSSION

The design capacity values for the sprayfield system were adjusted in the 2005 engineering report and are presented here, and compared to the existing values for the current 10 center pivot system.

DESIGN CAPACITIES		
	Existing (10 pivots)	Updated (14 pivots)
Flow:		
Avg flow for max month	7.60 MGD	10.6 MGD
Total Ann. Flow	718.7 MG	1003.4 MG
BOD ₅ : Load for max month	260,000 lbs/day	355,600 lbs/day
Total Nitrogen (N):		
Total Ann. Loading	537,776 lbs	792,603 lbs

TN Loading

The updated design TN load capacity is based on the lowest crop N requirement for a five year crop rotation cycle (2002-06) for the 14 center pivot system. This crop rotation is predominately alfalfa.

BOD Loading

The proposed increase in the BOD design load is based on an organic load of 200 lbs/acre/day; 200 x 1778 acres. This is two times higher than what is generally designed for to mitigate odors from land treatment systems (100 lbs/ac/day). Past Ecology reviews of BOD loading to Pasco's sprayfields were generally made based on preventing the generation of offensive odors by overloading with organic wastes.

Ecology took a more critical look at the updated BOD design load during the review of the engineering report. This was made because of recent findings at other land treatment facilities that the soluble BOD fraction of the wastewater can cause the weathering of the soils which can result in the leaching of calcium, magnesium, and other cations into the ground water. The soluble fraction can percolate deeper into the soil column where decomposition can cause weathering of the soils and the release of salts such as calcium and magnesium. These can leach out of the soil column and cause an increase in the dissolved solids content of the ground water.

Ecology's approval letter for the amended engineering report for the new sprayfields notified the city of this potential problem. The next permit will require some soluble testing of the wastewater and a re-evaluation of the BOD design capacity of the sprayfield

system relative to soluble BOD loading to the fields and the potential to impact the dissolved solids content of the ground water beneath the site.

WATER Loading

The proposed increase in the average flow for the maximum month (10.6 MGD) was determined using the ratio for the existing acres (1274) to the previous design flow for the maximum month (7.6 MGD), and the new sprayfield acreage (1778 acres).

$$\frac{1274 \text{ acres}}{7.6 \text{ MGD}} = \frac{1778 \text{ acres}}{X}$$

$$X = 10.6 \text{ MGD}$$

The design flow value of 7.6 MGD for the ten center pivot system was based on the 2001 crop requirements because that crop rotation had the lowest requirement for process water N and total water for the planned 1998 through 2002 production years (HDR Engineering, 1997).

V. CONCLUSION

The permit will be modified to add the four center pivots (504 acres) to bring the total sprayfield acreage to 1778 acres. The description of the sprayfield acreage will read:

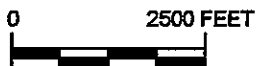
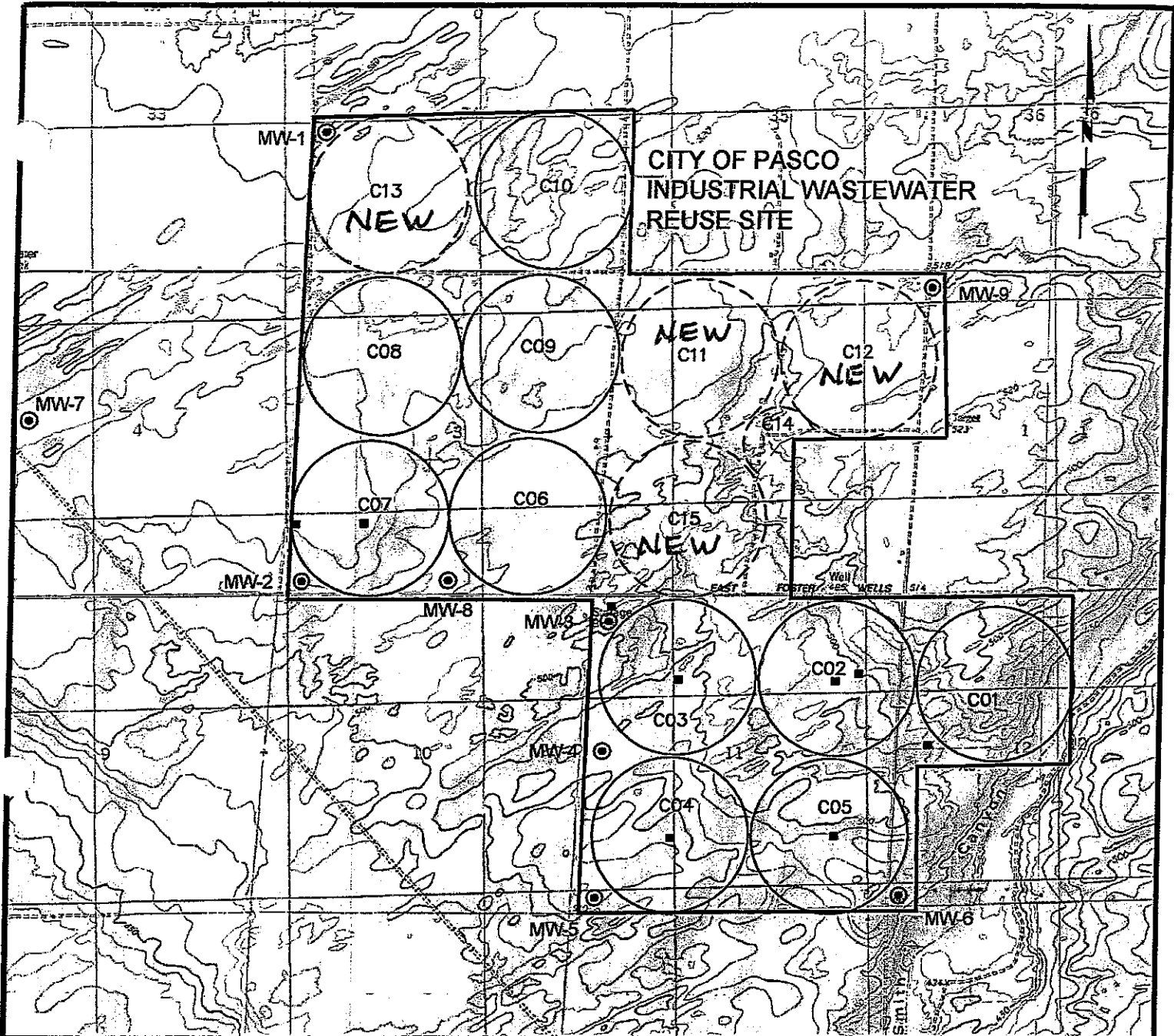
~~1150~~ **1778** acres; ~~SE ¼ S ½~~ of Section 34, T.10, R.30; ~~NW ¼ Section 12, N ½ and SW ¼ Section 2,~~ and Section ~~9,3,11~~ **3 and 11**, T.9, R.30, E.W.M.

The exact acreage of the site (1274 acres) was re-evaluated by the city after the current permit was issued.

VI. References

City of Pasco, 2005. Revision No. 2 to Supplement No. 2, Engineering Report, City of Pasco, Industrial Wastewater Treatment System. July.

HDR Engineering, 1997. Revision No. 1 to Supplement No. 2, Engineering Report, City of Pasco, Industrial Wastewater Treatment System. July.



SCALE

(LOCATIONS ARE APPROXIMATE)

EXPLANATION

- Fresh Supplemental Water Production Wells
- ⊙ MW-1 Monitoring Wells
- C01 Land Application Circle (dashed not currently used)

Fig. 1

(SOURCE: 7.5 MIN USGS TOPOGRAPHIC MAPS OF WASHINGTON ON CD-ROM, NATIONAL GEOGRAPHIC, 2000)

